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MINERAL INDUSTRY SURVEYS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
WASHINGTON, D.C. 20241



Donald Paul Hodel, Secretary

Robert C. Horton, Director

For information call W. F. Stowasser
Telephone: (202) 634-1190

Phosphate Rock, Monthly

ORIGINAL

MARKETABLE PHOSPHATE ROCK - AUGUST 1986

The annual rate of production of marketable phosphate rock in August 1986, calculated from reported data, was 43.8 million metric tons¹/, according to the Bureau of Mines, U.S. Department of the Interior. This was about a 36% increase from the production rate reported in July. Calendar Year 1985 production was about 51 million tons.

The annual rate of phosphate rock sold or used based on August reported data was 39.4 million tons, about 3% lower than that reported in July and about 15% lower than the 46.6 million-ton rate for 1985.

Producers' stocks at the end of August were about 16.0 million tons, about 3% more than July ending stocks.

According to the Bureau of the Census, exports for August were about 737,000 tons. The annual rate of exports was 8.7 million tons and was used to calculate apparent consumption.

Phosphate rock imports reported in August were 2,887 tons, 35 tons, and 66,701 tons from the Netherlands Antilles, the United Kingdom, and Togo, respectively. Imports to date are 354,150 tons with a c.i.f. value of \$17,595,580.

The annual rate of apparent consumption of marketable phosphate rock for August was 31.6 million tons. This was about 6% lower than the July rate and lower than the rate reported for all of 1985.

The price/value of marketable phosphate rock sold or used in the second 6 months of calendar year 1985 is shown in table 5, the first 6 months of 1986 is shown in table 6, and the full 1986 crop year is shown in table 7. Prices are in dollars per metric ton, f.o.b. mine, as reported by producing companies. The listed prices are weighted averages of reported prices or values.

¹/All data are in metric tons unless otherwise specified.

Prepared in the Division of Industrial Minerals, October 8, 1986.

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Mid-1986 Situation Report

In the United States, phosphate rock is mined in Florida, North Carolina, Tennessee, and the western States of Idaho, Utah, and Montana. There are 22 mines in Florida of which 6 are closed. There is one mine in North Carolina. There are 3 phosphate rock mining companies in Tennessee however, 1 will close October 31, 1986. In the western States, there are 7 phosphate rock mines and 1 is closed. Currently there are 26 operating phosphate rock mines and 7 are closed in the United States.

The combined capacity 1/ of Florida and North Carolina phosphate rock mines is 53.8 million metric tons per year. The mines in these States are operating at about 65% of capacity. The mines in Tennessee have a capacity of 1.5 million tons per year and are currently operating at 87% of capacity. In the western States, mine capacity is 9.4 million tons per year and they are operating at 46% of capacity. The total United States phosphate rock capacity is 64.7 million tons and the industry is operating at a current level of 63% of capacity.

Employment in phosphate rock mining is 3,486 in Florida and North Carolina, 192 in Tennessee, and 730 in the western States. The total employed mining phosphate rock in the United States is 4,408 people.

The life of a phosphate rock mine is dependent on the quantity of reserves remaining in the deposit, on the rate of mining, and on continuing favorable mine economics. The reserves of phosphate rock in mines located in the Western States, Tennessee, and North Carolina, are sufficient to permit operating well into the next century. The longevity of mines can be extended in the Western States and Tennessee by shifting to other deposits. The large deposit in North Carolina will sustain production for at least another 100 years. Although the life of phosphate mines is uncertain for the reasons stated, approximations can be made for the life of phosphate rock mines in Florida if it is assumed that there is sufficient demand for phosphate rock to justify the planned production schedule and that the selling price - production cost differential will assure the mines future profitability.

Considering all of the above qualifying modifiers, we estimate that the capacity of phosphate rock mines in Florida will decline as follows:

<u>Year</u>	<u>Capacity</u> (Million metric tons per year)
1986	48.3
1991	45.4
1992	43.4
1993	40.7
1995	31.6
1996	23.6
2000	19.8
2005	10.5
2010	8.0

As capacity of Florida phosphate rock mines decline in the 1990's, a number of scenarios could develop to offset the loss. Capacity in North Carolina could be increased to replace lost capacity in Florida; if phosphate rock selling prices improve and capital charges and operating costs are not permitted to increase, new mines could be developed on selected deposits in Florida; a few mines in Florida could extend their life by arranging to pump matrix or flotation feed from deposits adjacent to existing mines and recover the remaining reserves in the Bone Valley Formation of central Florida, and finally, phosphate rock could be imported with favorable pricing and backhaul vessel charges.

It is probable that all of the above scenarios could develop but since the forecast domestic demand for phosphate rock is either flat or negative, it is not likely that new phosphate rock mines will be constructed in Florida.

1/ Capacity - million metric tons per year operating on a 7-day per week basis.

Table 1.—United States phosphate rock statistics, 1986 by region
(Thousand metric tons)^{1/}

Period	Marketable Production	Sold and/or used			Ending stocks
		Domestic	Exports	Total	
		Florida and North Carolina			
January-----	2,587	1,715	621	2,336	15,087
February-----	3,313	2,183	718	2,901	15,591
March-----	3,187	2,673	592	3,265	15,513
First quarter-----	9,089	6,571	1,932	8,503	
April-----	3,183	2,594	660	3,254	15,442
May-----	2,952	2,467	461	2,928	15,254
June-----	2,626	2,166	745	2,911	15,269
Second quarter-----	8,760	7,227	1,866	9,093	
July-----	2,043	2,450	480	2,930	14,215
August-----	2,894	1,976	576	2,552	14,329
Year to date-----	22,788	18,223	4,854	23,077	
Year to date 1985-----	30,404	21,729	6,190	27,919	2/13,633
Tennessee					
January-----	42	79	--	79	116
February-----	74	90	--	90	104
March-----	101	103	--	103	104
First quarter-----	217	271	--	271	
April-----	126	113	--	113	121
May-----	146	134	--	134	139
June-----	134	133	--	133	148
Second quarter-----	406	381	--	381	
July-----	134	110	--	110	176
August-----	131	124	--	124	183
Year to date-----	887	886	--	886	
Year to date 1985-----	871	901	--	901	2/175
Western States ^{3/}					
January-----	306	168	37	205	1,008
February-----	218	165	34	199	997
March-----	313	193	44	237	1,031
First quarter-----	837	525	116	641	
April-----	377	328	55	383	983
May-----	426	402	52	454	915
June-----	506	386	25	411	975
Second quarter-----	1,309	1,117	132	1,249	
July-----	559	400	5	405	1,086
August-----	697	674	--	674	1,479
Year to date-----	3,402	2,968	--	2,968	
Year to date 1985-----	3,536	3,136	568	3,731	2/749
United States					
January-----	2,935	1,961	658	2,619	16,212
February-----	3,607	2,438	752	3,190	16,692
March-----	3,602	2,969	636	3,605	16,647
First quarter-----	10,143	7,366	2,048	9,414	
April-----	3,686	3,035	716	3,751	16,546
May-----	3,524	3,003	513	3,516	16,308
June-----	3,265	2,685	770	3,455	16,412
Second quarter-----	10,475	8,725	1,998	10,723	
July-----	2,738	2,959	485	3,444	15,478
August-----	3,721	2,774	576	3,350	15,990
Year to date-----	27,078	21,824	5,107	26,931	
Year to date 1985-----	34,811	25,794	6,758	32,552	2/ 14,557

^{1/}Data may not add to total(s) shown because of independent rounding.

^{2/}Ending stocks, prior year comparative monthly report.

^{3/}Includes Idaho, Montana, and Utah.

Table 2.--Selected U.S. exports of phosphate rock, 1985 and 1986 ^{1/} _{2/}
(Thousand metric tons and thousand dollars)

Destination	1985		1986			
	Quantity	Value	August		Year to date	
			Quantity	Value	Quantity	Value
Belgium-Luxembourg--	NA	NA	30	NA	468	NA
Canada-----	NA	NA	185	NA	1,557	NA
France-----	NA	NA	7	NA	558	NA
Japan-----	NA	NA	94	NA	727	NA
Korea, Republic of--	NA	NA	112	NA	923	NA
Netherlands-----	NA	NA	75	NA	390	NA
Poland-----	NA	NA	--	NA	409	NA
Rest of World-----	NA	NA	234	NA	1,163	NA
Total-----	10,166	357,224	737	23,547	6,195	201,534

NA Not available.

^{1/}All values free alongside ship (f.a.s.) at U.S. ports.

^{2/}Actual phosphate rock exports reported in Schedule B number 480.4500.

Source: Bureau of the Census.

Table 3.--U.S. apparent consumption of phosphate rock, 1986 ^{1/}
(Thousand metric tons)

Period	Apparent consumption
January-----	1,932
February-----	2,412
March-----	2,661
April-----	3,154
May-----	2,453
June-----	2,938
July-----	2,856
August-----	2,683
Year to date-----	21,089
Year to date 1985-----	24,803

^{1/}Measured as sold or used, plus imports, minus exports--Schedule B, 480.4500.

Table 4.—Comparative phosphate rock statistics
(Million metric tons per year and dollars per metric ton for period shown)

	1983 ^{1/}	1984 ^{1/}	1985 ^{1/}	1986		
				Year to date	July	August
United States:						
Marketable production:						
Florida and N. Carolina	36.0	42.5	45.2	34.2	24.1	34.0
Tennessee-----	1.2	1.4	1.2	1.3	1.6	1.5
Western States-----	5.4	5.4	4.4	5.1	6.6	8.2
Total ^{2/} -----	42.6	49.2	50.8	40.7	32.2	43.8
Sold or used by producers:						
Florida and N. Carolina	40.2	46.4	40.9	34.7	34.5	30.0
Tennessee-----	1.2	1.3	1.3	1.3	1.3	1.5
Western States-----	5.4	5.5	4.5	4.5	4.8	7.9
Total ^{2/3/} -----	46.8	53.3	46.6	40.4	40.5	39.4
Yearend Stocks-----	14.5	11.9	15.5	XA	XX	XX
Exports ^{4/} -----	12.0	11.5	10.3	9.4	6.9	8.7
Average value per ton ^{5/}	\$34.72	\$33.68	\$35.14	\$32.54	\$33.53	\$31.95
Imports for consumption ^{6/}	9	9	34	0.5	(7/)	0.8
Average value per ton ^{8/}	\$42.00	\$31.71	\$51.54	49.69	--	--
Apparent consumption-----	34.8	41.8	36.4	31.7	33.6	31.6

XX Not applicable.

^{1/}Data modified to agree with 1985 Phosphate Rock Minerals Yearbook chapter data.

^{2/}Data may not add to totals shown because of independent rounding.

^{3/}Includes exports reported by producers.

^{4/}Data supplied by the Bureau of the Census--Schedule B, 480.4500.

^{5/}Calculated from free alongside ship (f.a.s.) values at U.S. ports.

^{6/}Data supplied by the Bureau of the Census under International Trade Commission-Tariff Schedule TSUSA No. 480.4500.

^{7/}Less than 1/2 unit.

^{8/}Calculated from cost, insurance, and freight (c.i.f.) values at U.S. port(s).

TABLE 5

PHOSPHATE ROCK PRICES
JULY 1 - DECEMBER 31, 1985
(DOLLARS PER METRIC TON, F.O.B. MINE)

GRADE % BLP	DOMESTIC	EXPORT	AVERAGE
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-----UNITED STATES-----

+74	30.35	39.69	34.28
72-74	15.89	23.15	18.50
70-72	16.18	24.27	22.80
66-70	21.04	26.63	22.02
60-66	19.95	32.23	20.62
-60	22.30		22.30
AVERAGE	20.98	27.37	22.32

--FLORIDA AND NORTH CAROLINA---

+74	30.35	39.69	34.28
72-74	15.89	23.15	18.50
70-72	16.18	24.27	22.80
66-70	20.30	21.92	20.56
60-66	21.05	20.64	21.03
-60			
AVERAGE	20.69	24.70	21.53

-----WESTERN STATES-----

+74			
72-74			
70-72			
66-70	31.06	49.12	37.35
60-66	10.17	42.26	17.66
-60	21.93		21.93
AVERAGE	23.76	47.53	30.99

-----TENNESSEE-----

+74			
72-74			
70-72			
66-70			
60-66			
-60	22.32		22.32
AVERAGE	22.32		22.32

TABLE 6

PHOSPHATE ROCK PRICES
JANUARY 1 - JUNE 30, 1986
(DOLLARS PER METRIC TON, F.O.B. MINE)

GRADE % BLP	DOMESTIC	EXPORT	AVERAGE
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-----UNITED STATES-----

+74	33.50	45.39	38.95
72-74	23.05	30.23	27.27
70-72	20.47	29.61	25.40
66-70	23.48	23.46	23.48
60-66	17.88	27.96	19.63
-60	22.10		22.10
AVERAGE	22.68	27.61	23.84

---FLORIDA AND NORTH CAROLINA---

+74	33.50	45.39	38.95
72-74	23.05	30.23	27.27
70-72	20.47	24.81	22.64
66-70	22.87	22.41	22.79
60-66	18.66	21.23	19.03
-60	21.50		21.50
AVERAGE	22.38	25.50	23.13

-----WESTERN STATES-----

+74			
72-74			
70-72		56.79	56.79
66-70	30.07	42.21	31.39
60-66	12.29	43.18	22.91
-60	21.93		21.93
AVERAGE	26.27	48.97	32.16

-----TENNESSEE-----

+74			
72-74			
70-72			
66-70			
60-66			
-60	22.35		22.35
AVERAGE	22.35		22.35

TABLE 7

PHOSPHATE ROCK PRICES
JULY 1, 1985 - JUNE 30, 1986
(DOLLARS PER METRIC TON, F.O.B. MINE)

GRADE % BLP	DOMESTIC	EXPORT	AVERAGE
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-----UNITED STATES-----

+74	31.51	41.99	36.07
72-74	20.15	28.74	24.61
70-72	19.69	27.15	24.46
66-70	22.36	24.97	22.80
60-66	19.20	29.34	20.22
-60	22.18		22.18
AVERAGE	21.87	27.50	23.12

--FLORIDA AND NORTH CAROLINA---

+74	31.51	41.99	36.07
72-74	20.15	28.74	24.61
70-72	19.69	24.54	22.70
66-70	21.68	22.19	21.76
60-66	20.19	21.09	20.26
-60	21.50		21.50
AVERAGE	21.57	25.15	22.38

-----WESTERN STATES-----

+74			
72-74			
70-72		56.79	56.79
66-70	30.47	47.39	34.28
60-66	11.04	42.76	20.02
-60	21.93		21.93
AVERAGE	25.13	48.24	31.61

-----TENNESSEE-----

+74			
72-74			
70-72			
66-70			
60-66			
-60	22.33		22.33
AVERAGE	22.33		22.33